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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,154	02/08/2002	William Brum	B01-59	9822

7590

04/01/2004

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EXAMINER

PADGETT, MARIANNE L

ART UNIT PAPER NUMBER

1762

DATE MAILED: 04/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/071,154

Applicant(s)

Brum, William

Examiner

M.L. Padgett

Group Art Unit

1762

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 6/13/03
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 3-11 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 3-11 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2/8/02
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 and 2 are, drawn to an apparatus for glow discharge treatment of golf balls using a perforated tumbler, classified in class 118, subclass 723E or 728+.
 - II. Claims 3 and 4, drawn to a method for treating plural golf balls in a perforated unpolymerizable plasma gas, classified in class 427, subclass 535+ or 569+.

2. The inventions are distinct, each from the other because:

Inventions Group II and Group I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process (MPEP § 806.05(e)). In this case the apparatus may be used for different processes, such as treating single golf balls or plasma treating with a different pressure regime, as the pressures used in a method limitation does not necessarily effect the structure of the claimed apparatus, i.e. does not further limit it.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Michael Burns on June 2 & 3, 2003 a provisional election was made without traverse to prosecute the invention of without, claims 3 and 4. [Affirmation of

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this election must be made by applicant in replying to this Office action.] Claims 1 and 2 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant's election without traverse of group II, method claims in Paper of 6/13/03 (preliminary amendment) is acknowledged.

It is noted that the preliminary amendment of June 3, 2003 with included response to restriction of June 2, 2003, responds to the above written restriction of June 2, 2003, responds to the above written restriction, which has been included herein in order to complete the record. The applicant need not respond again, especially as the non-elected claims are now cancelled.

5. Claims 3-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of relative terms that lack clear metes and bounds in the claims, or in a clear definition providing in the specification or in cited relevant prior art, is vague and indefinite. In claim 3, see "high" in "high electrode voltage". The term is used on page 6, line 23 of the specification, but no exemplary value is used, let alone a definition provided to clarify the metes and bounds of this relative term. Also in claim 11, see "hard", describing the coating, where page 8, line 21, is noted to use the term without defining the metes and bounds of hard.

Note that order of listing limitations does not necessitate order of doing, unless temporal limitations or antecedence require an order of doing. Applicants may wish to note that for their "placing..." and "rotating..." steps, there is no necessary (only implied) plasma treatment, because the phrase "for an even exposure of plasma..." is not a positive requirement that the balls actually be exposed, and there is no particular effect or required treatment by the plasma discharge elsewhere.

In claim 11, it is unclear if "anodic coating" means that the tumbler, which is also associated with the casing electrode is intended to be an anode, or as disclosed on page 8 of the specification, the "hard

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coat" was "anodized" on the tumbler. As presently written, the phrasing is ambiguous and could provide other meanings, especially as the relative term "hard" provide no clear meaning.

In claim 7, it is unclear how the limitation that the holes in the tumbler of the apparatus, were individually machined (as opposed machined in groups, etc.), makes any difference to the structure of the apparatus, and hence to the performing of the process. How a piece of an apparatus, employed in a process was made, can only be relevant to the process (in this case treating a plurality of golf balls), if its mode of manufacture produces some distinctive mode of operation that will effect its use. In this case, none is apparent.

7. The limitation, "drawing with a dry vacuum system a vacuum of...", the examiner takes to mean the same thing as evacuating the chamber, i.e. sealed casing. In general, vacuum systems are not wet, hence unless one teaches to use water or the like, it will be considered "dry".

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyachi et al (4,613,403), in view of Mathis (5,370,737).

In Figures 1, 1B, 2, and column 3, lines 44-63, Oyachi et al disclose an apparatus for treating a golf ball surface comprising a sealed casing 1, a tumbler 5 for holding golf balls 6 in the casing, and an electric source 7 for applying high voltage across the electrodes 1 & 8 in order to generate glow discharge (column 3, lines 44-53), wherein the tumbler has a plurality of perforated holes in a staggered pattern covering a substantial portion of the tumbler surface (column 3, lines 57-58, Fig. 1B). In Ex. 1 (column 4, lines 48-68+), Oyachi et al teach evacuating the casing enclosure to reduce the pressure to 10^{-3} torr, i.e., 1 mtorr, which is within the range of pressures claimed by applicant. On column 3, lines 44-50, it is

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noted that the gas outlet line 3 leads to a pump, but the pumping system used is not further described. It is noted that Oyachi et al further let oxygen gas into the casing to bring the pressure up to 1 torr, then plasma treat. This pressure manipulation is considered entirely within the scope of the claimed invention, as the steps are "comprising"; the claim language makes no connection between the step of "drawing a vacuum", and creating a plasma; and applicant's example on page 7 also inputs gas which brings up the pressure, after an initial evacuation pressure is achieved. Also, no oils are indicated to be present, and with the vacuums achieved, there would be no reason to expect a difference. Nor do applicant's claims have any source of oil to be isolated from.

With respect to claim 7, where the plurality of holes are individually machined, although the Oyachi et al is silent on how the holes are made, this feature is not patentably distinct, since a recitation of how the holes were made when the apparatus being used was made, must result in a structural difference which in turn results in a processing difference between the invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Therefore, since the prior art structure of Oyachi et al having a tumbler with perforated holes would appear equally capable of performing the intended use of treating golf balls whether the holes were individually machined or made, or formed in groups or in mass, hence any means capable of having produced the apparatus under use would have been obvious.

With respect to claim 6, the apparatus further includes a pattern that yields an open hole surface area of greater than 50 percent (see Fig. 1B).

Oyachi et al differs from the present claims by not using a "plasma discharge rod" or rod electrode inside their cylindrical electrode, but instead uses either the cage or a cylindrical electrode surrounding the cage as the electrode. Mathis is also plasma treating multiple substrates that are rotated inside a cylindrical electrode arrangement, however he teaches that placing the substrates between two coaxial electrodes to create the plasma by discharge between them creates a more homogenous plasma

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treatment, especially for simultaneous treatment of multiple substrates (Abstract; Figures 1-2, 5-6; column 1, lines 8-15 and 22-38; column 2, lines 10-30+ and 62- column 3, line 68; column 6, lines 34-53; column 7, line 66- column 8, lines 23 and 44- column 9, line 21). Given Mathis' teachings of coaxial electrodes resulting in more homogenous plasma discharge, it would have been more obvious to one of ordinary skill in the art to apply such principles to the golf ball treating tumbler structure plasma apparatus of Oyachi et al, as the even surface treatment afforded by more homogenous plasma processing would have been beneficial to improved adherence effects intended by Oyachi et al process. As Oyachi et al's substrates are balls, not planar discs, the cage employed in the primary reference can be considered to correspond to the Mathis' carrier, and a central powered cylindrical electrode placed inside Oyachi et al's cage structure, as would have been suggested by the Mathis teachings, corresponds to the claimed discharger rod in position, shape and function.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oyachi et al, in view of Mathis as applied to claims 3 and 5-7 above, and further in view of Gaudreau (6,368,676B1) et al or Yamazaki (5,601,883).

Oyachi et al does not teach any particular pumping system as noted above, hence No. 2 stage method of drawing the claimed vacuum is discussed, however such procedures are conventional or standard practice for creating very low pressure as are employed in plasma processes, such as that Oyachi et al with the first stage often called rough pumping for the initial "rougher" created vacuum. Exemplary plasma apparatus pumping systems includes that of Gaudreau et al, which first employs a diffusion pump, then a cryogenic cold trap type pump to prevent back streaming of oil in the diffusion pump (column 2, line 64- column 3, line 2 and column 5, lines 49-63); or include Yamazaki who teaches a dual pump system of a turbo molecular pump, plus a rotary pump to obtain 1×10^{-6} torr or lower for plasma treating multiple tumbled objects (Fig. 1, column 3, lines 1-67, esp. lines 60-62). It would have been obvious to one of ordinary skill in the art, to apply either of the multi-stage vacuum process to achieve the pressure

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desired by Oyachi et al, as the primary references provides no specific means and either of the Yamazaki or Gaudreau et al systems would have been expected to achieve Oyachi et al's desired values, and as they are being used in plasma processing expected to be compatible therewith. Gaudreau et al is noted to specifically mention the benefit of keeping pump oil (lubricating) from contaminating the plasma treatment area, and while not discussed, the turbo molecular pump which achieves the higher vacuum of Yamazaki would have been expected to produce a like effect.

11. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyachi et al, in view of Mathis as applied to claims 3 and 5-7 above, and further in view of Usui et al (5,591,268).

Oyachi et al fails to teach holes having a curved radius machined about their outer edges.

Referring to Fig. 6b and column 9, lines 36-44, Usui et al are teaching an apparatus having a cylindrical electrode member 22a having a curved radius machined about their outer edges. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the holes of the tumbler of Oyachi et al with a curved radius machined about the outer edges as taught by Usui et al, since the cylindrical electrode member of Usui et al is an equivalent structure to the tumbler electrode in Fig. 2 of Oyachi et al.

With respect to the dimensions of the holes (claims 8 and 10), where the only differences between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device and its operation was not patentably distinct from the prior art device. It is further noted that hole size may depend in part on the size of the object being caged, and would have been expected to have been optimized to achieve efficient gas flow, as well as to not impede the tumbling effects of the objects, golf balls, being treated.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oyachi et al, in view of Mathis as applied to claims 3 and 5-7 above, and further in view of Kaji et al (5,895,586).

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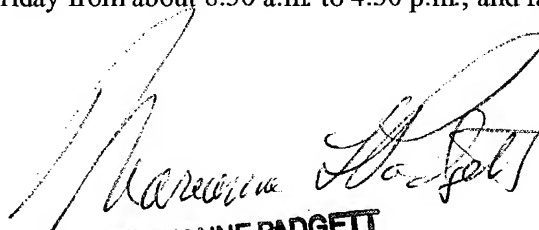
Oyachi et al fails to teach an aluminum sheet metal approximately 0.25 inches to 0.375 inches thick, and the sheet metal having a hard anodic coating applied thereon.

Referring to the abstract and column 5, line 44-column 6, line 5, Kaji et al teach a glow discharge apparatus wherein the components are made of aluminum having a hard anodic coating. Aluminum is a known material used in glow discharge apparatus and anodic coatings are known protective coatings. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the tumbler of Oyachi et al of aluminum with a hard anodic coating as taught by Kaji et al, since aluminum is a known material used in glow discharge apparatus and anodic coatings are known protective coatings. Additionally with respect to the thickness of the aluminum sheet, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, the claimed device was not patentably distinct from the prior art device.

13. Other art of interest for plasma treating multiple objects simultaneously while tumbling them include: Thomas et al (6,060,129); Lemelson (4,859,493, see Figures 3-5); Steube (3,926,147) and Akai et al (4,397,885). The patents to Fetherston et al (5,988,103) and Kusano et al (5,466,424, see Fig. 6), teach further co-axial electrode arrangements for plasma discharge.

14. Any inquiry concerning this communication should be directed to Marianne L. Padgett whose telephone number (571) 272-1425 on Monday-Friday from about 8:30 a.m. to 4:30 p.m.; and fax phone number is (703) 872-9306.

M.L. Padgett/dh
March 15, 2004
March 25, 2004



MARIANNE PADGETT
PRIMARY EXAMINER